

UNITED PROVINCES
BOILER INSPECTION
RULES

—
1924
—

270



ALLAHABAD

Printed by the Superintendent, Government Press, United Provinces

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United Provinces Boiler Inspection Rules, 1924.

1. These rules may be called the United Provinces Boiler Inspection Rules, 1924.

Short title.

2. Subject to the provisions of section 4 of the Indian Boilers Act, 1923, they shall extend to the whole of the United Provinces of Agra and Oudh.

Extent.

I.—PRELIMINARY.

3. In these rules unless there is anything repugnant in the subject or context:—

Definition.

(a) "The Act" means the Indian Boilers Act, 1923.

(b) "Section" means a section of the said Act.

(c) "Regulation" means a regulation framed by the Government of India under section 28 of the said Act.

(d) "Accident" means an explosion of a boiler or steam-pipe or any damage to a boiler or steam pipe which is calculated to weaken the strength thereof so as to render it liable to explode.

4. All fees payable under the Act shall be deposited by the payer in a Government Treasury or the Imperial Bank of India. Applications under sections 7 and 8 of the

Act, to which the treasury or bank receipt for payment is affixed, shall be deemed to be accompanied by the prescribed fee.

Pay.

NOTE.—Applications for the registration or inspection of boilers should be sent on Form C to the Chief Inspector of Factories and Boilers, United Provinces, Sarsayaghat Road, Cawnpore, accompanied with a treasury or bank receipt for the amount of the prescribed fee. Form C can be obtained from the Chief Inspector's office, Cawnpore, on application.

The scale of inspection fees is given in rule 32(i) and that of registration fees in clause 159 of the Indian Boiler Regulations, 1924, which is reproduced below for facility of reference:—

| | | Registration fee, | |
|-----|----------------------------------------------------------|-------------------|-----|
| | | Rs. | |
| add | For boiler rating not exceeding 100 .. | 40 | |
| | For boiler rating exceeding .. 100 but not exceeding 300 | 50 | |
| adj | Ditto .. 300 | 500 | 60 |
| | Ditto .. 500 | 700 | 70 |
| cat | Ditto .. 700 | 900 | 80 |
| | Ditto .. 900 | 1,100 | 90 |
| -- | Ditto .. 1,100 .. | 1,200 | 100 |

(Rating is the number of square feet of heating surface of the boiler .

II.—DUTIES OF THE CHIEF INSPECTOR.

5. The Chief Inspector shall work under the administrative control of the Director of Industries, and shall submit to him :—
Control by Director of Industries.

- (a) an annual report on the administration of the Act ;
- (b) such other reports and returns as may be called for.

Exceptional cases which are not covered by the regulations or rules should be reported to the Director of Industries.

5(2). The Chief Inspector shall be required to possess either (a) a Qualifications of the diploma of A. M. I. M. E. or an extra Board of Chief Inspector. Trade certificate and shall have had 15 years' experience in the management, repairs or inspection of boilers, or (b) a first class Board of Trade certificate with the same practical experience as in (a).

6. The Chief Inspector is vested with all the powers of an Inspector under the Act. His main duty, however, consists in supervising and controlling the work of the Inspectors and he should only actually inspect or examine boilers in exceptional cases, or where he considers that the work of an Inspector requires a personal check.

Duty of general control.
Specific duties.

7. The Chief Inspector shall :—

- (a) receive applications for registration or inspection under sections 7 and 8, proposals for repairs, alterations or renewals under section 12 and reports of accidents under section 18 ;
- (b) personally check the registration and scrutinise the measurements of all newly registered boilers for the initial working pressure on the basis of Part I of the regulations and enter under his own signature all orders required by sections 7 and 8 ;
- (c) enter under his own signature any subsequent entries required in the Registration Book ;
- (d) obtain from the province of registry the Registration Book of any boiler the transfer of which is reported under section 6 (b) ;
- (e) fix the area under the control of each Inspector ;
- (f) approve the programme of all Inspectors subordinate to him with due regard to the convenience of owners generally ;
- (g) examine and countersign the Inspector's Memorandum of Inspection Book of each boiler after each inspection ;
- (h) examine and pass orders on the diaries and returns of Inspectors ;
- (i) pass orders in all cases in which an Inspector proposes to increase or reduce the pressure allowed for any boiler under

section 8 or to revoke, cancel or re-use to renew the certificate of a boiler under section 11, or to order important repairs, structural alterations or renewals in a boiler under section 8;

(j) pass orders in all cases in which it is reported that after due notice the boiler has not been properly prepared for inspection;

(k) decide all appeals against the order of an Inspector under section 19;

(l) sanction prosecutions under the Act;

(m) inquire into serious accidents to boilers.

8. It shall be the duty of the Chief Inspector to advise owners as regards the maintenance, working and cleaning of boilers; he should issue a set of instructions on the lines indicated in the appendix of the report of the Boiler Laws Committee. These instructions should be hung up in each boiler house.

9. The Chief Inspector shall keep in his office :—

(a) a register in form A of all boilers registered in the province or the registry of which has been transferred from another province;

(b) the Registration Book and Memorandum of Inspection Book of all boilers borne on his register;

(c) a Register of Appeals;

(d) a Register of Accidents;

(e) a Register of Registration and Inspection fees received.

10. The Chief Inspector shall be the controlling or countersigning authority in respect of all contingent bills and of travelling allowance bills of officers subordinate to him.

III.—DUTIES OF INSPECTORS.

11. Inspectors shall be directly subordinate to, and under the control of, the Chief Inspector; they should ordinarily be appointed to take charge of specific areas.

11(i). An Inspector shall be required to, possess one of the following qualifications of Inspectors. certificates :—

(a) A first class Board of Trade certificate,

or

(b) A first class certificate of Engineering in India.

In addition to either of the above certificates he shall have not less than ten years' experience in the management, repairs or inspection of boilers.

12. The main duties of the Inspector, as laid down in the Act, are the inspection and examination of boilers and steam-pipes. Inspections shall be carried out in accordance with Part II of the regulations and Parts IV and V of the Rules, which must be very closely observed.

13. In addition to the inspection and examination of boilers, it is the duty of Inspectors to search for unregistered or uncertificated boilers within their areas and to see that certificated boilers are worked in accordance with the terms of their certificates.

14. At the time of inspection Inspectors should advise the owner and the person in charge of the boiler on the management and upkeep of the boiler, with special reference to the amount of cleaning required in view of the quality of water used.

Specific duties. 15. Inspectors shall :—

- (a) prepare a programme of inspection with regard to the convenience of owners generally and submit it at such periods as may be prescribed, at least 14 days before the first date fixed in the programme, to the Chief Inspector for approval; after which no alterations shall be made in the programme of inspection without the Chief Inspector's approval, except minor alterations due to unavoidable delays while on tour;

N.B.—Inspection of boilers in seasonal factories should ordinarily be fixed immediately after the date when work in the factory ceases, and in all cases during the off season.

- (b) maintain a Memorandum of Inspection Book for each boiler under their charge and submit it to the Chief Inspector for examination and countersignature after each inspection;
- (c) keep a diary for weekly submission to the Chief Inspector, showing places visited, boilers registered or inspected with fees paid thereon, variations from the programme and any other important particulars;
- (d) inquire into accidents to boilers or steam-pipes and report to the Chief Inspector;
- (e) report to the Chief Inspector cases of unreported accidents discovered at the time of inspection;
- (f) submit for the orders of the Chief Inspector :—
 - (i) the Memorandum of Inspection Books of all boilers proposed for registration under section 7;
 - (ii) proposals for increasing or decreasing the pressure of a boiler after inspection under section 8;
 - (iii) proposals for necessary repairs, structural alterations or renewals to a boiler under section 8 or 12;

Pro
re
note
on

(iv) proposals for revoking, cancelling or refusing to renew a certificate under section 11 or 8;

(v) report when boilers have not been properly prepared for inspection under section 14;

(vi) proposals for prosecutions under the Act.

16. No examination of a boiler shall be made by an Inspector for the purpose of registering, or issuing a certificate for a boiler on a Sunday or on any of the gazetted holidays noted below or between the hours of sunset and sunrise without the specific orders of the Chief Inspector in each case. In such cases a double fee may be charged, half of which may be payable to the Inspector :—

| | | | | | | |
|-----------------------------------------|----|----------|---------------------|----|----|----------|
| Christmas Day | .. | One day | Diwali | .. | .. | One day. |
| New Year's Day | .. | One day | Basant Panchmi | .. | .. | One day. |
| Good Friday | .. | One day | Sheoratri | .. | .. | One day. |
| The Birthday of H. M. the King-Emperor. | | One day | Krishan Janamashtmi | .. | .. | One day. |
| | | | Raksha Bandhan | .. | .. | One day. |
| Holi | .. | Two days | Id-ul-Fitr | .. | .. | One day. |
| Dasehra | .. | Two days | Idul-Zuha | .. | .. | One day. |
| Moharram | .. | Two days | Bara Wafat | .. | .. | One day. |

17. Under orders of the Chief Inspector, Inspectors shall attend during the hearing of appeals with regard to boilers under their charge before the Chief Inspector or the Appellate Authority.

18. Every Inspector shall keep in his office or in that of the Chief Registers to be kept. Inspector :—

- (a) a register in form A of all registered boilers situated within his jurisdiction;
- (b) a register of accidents;
- (c) a register of registration and inspection fees received.

IV.—ADMINISTRATIVE INSTRUCTIONS FOR REGISTRATION.

19. Technical regulations for the registration of boilers and the scale of fees for registration are prescribed in Part II of the regulations. The details of measurement recorded at the time of registration constitute a permanent record for the boiler and determine the original pressure at which the boiler is allowed to work. It is accordingly essential that the work should be done with the greatest care and precision.

20. Applications for registration shall be made on the prescribed form under section 7(1) to the Chief Inspector of Factories and Boilers, Cawnpore, and shall be accompanied under rule 4 by a receipt for the prescribed fee. No application shall be accepted without the receipt.

No boiler shall be registered, if on measurement the fee is found to be deficient, until the deficit has been paid. Any excess payment will be refunded at the time of registration. •

21. It is essential that no delay should occur in registration. On receipt of the application a date should be fixed for inspection giving ten days' clear notice to the owner. If it appears from the application that the boiler is ready for inspection, the earliest possible date should be fixed. If not, the owner should be directed to have the boiler ready for inspection within 30 days of the date of the application. The hydraulic and steam tests shall be done as soon as possible after intimation from the owner that the boiler has been properly prepared and is ready for inspection. The Chief Inspector shall issue his orders under section 7(4) without delay.

22. (i) Where, in order to approximate the date of annual inspection to the date when other boilers in the locality are inspected on tour, the Inspector grants a certificate for such period less than twelve months as may be necessary for such approximation of dates, the certificate shall be granted for a sum equal to one-third of the ordinary fee due for granting a renewal certificate for twelve months or a sum to be calculated at one-twelfth of the ordinary fee for each full month (portion of a month not being reckoned), whichever sum is the greater.

22. (ii) The period of a certificate when a boiler is registered shall be calculated from a date two months after the date on which the open examination was made or from the date of the provisional order allowing the boiler to be used, whichever is earlier.

(iii) Renewal certificates of new boilers certified within six months of the tour period and of other boilers certified within three months of tour period, at the first inspection on tour, may be granted after inspection under steam and without open examination if the Inspector considers the condition of the boiler is satisfactory.

(iv) Certificates granted otherwise than on tour shall ordinarily be given up to the first of the month prescribed in the tour programme for that district. This applies to all boilers registered in the province.

23. The Chief Inspector shall maintain a register of registered boilers in serial order in form A in two parts; in Part I (boilers originally registered in the province) the registered number of a boiler shall be the one immediately following the last serial number in the register. Gap numbers due to boilers being broken up or transferred to another province shall not be filled up. In Part II (boilers originally registered in other provinces) entries shall be made as prescribed in rule 25. Inspectors shall keep a similar register for all boilers within their jurisdiction.

24. Whenever a boiler is transferred from one province to another, the owner shall, under section 6 (b), apply on the prescribed form to the Chief Inspector of the province to which the boiler is transferred for the registration of the transfer; the boiler cannot be used until registration has been effected. The Chief Inspector shall then obtain from that province the Registration and Memorandum of Inspection Books of the boiler. No fee shall be charged for recording transfers.

25. On receipt of the Registration and Memorandum of Inspection Books, the Chief Inspector shall enter the boiler under its original number in Part II of his register, and shall instruct the Inspector of the local area in which the boiler is situated to enter it similarly in his register. The Registration Book and the Memorandum of Inspection Book shall be kept in the Chief Inspector's office.

26. Whenever a boiler has been transferred the fact shall be noted in the register of the province from which it has been transferred. In the case of a boiler that has been permanently dismantled or broken up the Registration Book and the Memorandum of Inspection Book shall be destroyed.

27. Certificates of boilers moved will cease in accordance with the provisions of section 8 (1) (C).

V.—ADMINISTRATIVE INSTRUCTIONS FOR INSPECTION.

28. Detailed instructions for the inspection of boilers are contained in Part II of the Regulations. In making inspections it is important that the Inspector should pay particular attention to entries made in the Memorandum of Inspection Book at the time of the previous inspection.

29. (i) In arranging for inspections particular attention should be paid to the provision of rule 15(a). The notice required by section 8(4) shall be sent in form B. If an hydraulic test is necessary in addition to the ordinary inspection ample notice must be given to the owner. During the inspection of one of a battery of boilers the Inspector should take the opportunity of examining the other boilers under steam, with special reference to the water gauges, pressure gauge and safety valves.

(ii) An Inspector shall inspect on tour any boiler in respect of which an application for the renewal of the certificate has reached the office of the Chief Inspector of Factories and Boilers, Cawnpore, not later than the 1st of the month preceding the month assigned in the tour programme for the inspection of boilers in that particular district, and also any boiler which the Chief Inspector may direct him to inspect on tour notwithstanding that the application for a renewal certificate in respect thereof has been received after such date. This direction shall only be made by the Chief Inspector when no extra expense or waste of an Inspector's time is occasioned by reason of the delay in receipt of the application.

Applications for the renewal of certificates of boilers in the Cawnpore district should reach the office of the Chief Inspector not later than the first of the month preceding that in which the certificate expires.

(iii) It shall be presumed that an application for registration or for renewal of a certificate is an application for the inspection on tour of the boiler concerned for the purpose of the certificate, unless the contrary appears from the terms or date of the application or otherwise.

(iv) The following tour programme shall be observed until varied by order of the Chief Inspector. In the event of the tour programme being changed, the Chief Inspector shall cause the revised programme to be published in the local official gazette and in any other way that he may consider desirable :—

TOUR PROGRAMME.

| <i>Month.</i> | | <i>District.</i> |
|---------------|-----|-------------------------------------------------------------------------------------------------|
| January ... | ... | .. Lucknow. |
| February | ... | ... Kheri, Shahjahanpur, Sitapur and Unao. |
| March ... | ... | ... Ghazipur, Banda, Hamirpur, Jalaun and Jhansi. |
| April ... | ... | ... Bijnor, Meerut, Muzaffarnagar, Benares and Jaunpur. |
| May ... | .. | .. Hathras (Aligarh), Bara Banki, Etawah, Fatehpur, Sasni (Aligarh) and Rae Bareli. |
| June ... | ... | ... Aligarh, Bahraich, Fyzabad, Gonda and Sultanpur. |
| July .. | ... | ... Muttra, Saharanpur, Hardoi and Farrukhabad. |
| August ... | ... | ... Bulandshahr, Etah and Agra. |
| September | ... | ... Budaun, Moradabad, Ballia, Basti, Gorakhpur, Mainpuri, Kashipur (Naini Tal), Gin factories. |
| October ... | ... | ... Bareilly, Pilibhit and Mirzapur. |
| November | ... | ... Allahabad, Partabgarh, Naini Tal and Almora. |
| December | ... | ... Dehra Dun, Garhwal and Azamgarh. |

NOTE.—(1) Inspections in Cawnpore are carried out during the whole year.

(2) A special concession is made in the case of Ice Factory boilers which may be inspected in November and December.

(v) Tour programme for Public Works department road roller boilers.

These boilers will be inspected in the months fixed for district inspections, with the following exceptions:—

| <i>Month.</i> | | <i>District.</i> |
|---------------|-----|-------------------------|
| February ... | ... | Bareilly and Pilibhit. |
| April ... | ... | Moradabad and Mirzapur. |
| May ... | ... | Muttra and Agra. |
| December ... | ... | Saharanpur and Basti. |

Other boilers belonging to the Public Works department will be inspected in accordance with the tour programme prescribed under sub-rule (v) above.

30. In cases in which the Inspector is empowered to issue a certificate under section 8 without further reference the certificate should ordinarily be issued within 48 hours of the completion of the inspection. *Issue of certificates and provisional orders.* Permission on manuscript form may be given to the owner of a boiler immediately after inspection, when permission for the full period is recommended. This will invariably be followed up by a certificate from the Chief Inspector's office, Cawnpore. Where the Inspector proposes to issue a provisional order he must satisfy himself that the boiler is fit to be worked at the maximum pressure and for the period entered in the provisional order. The fact of issue of a provisional order must be reported immediately to the Chief Inspector.

31. Provisional orders and certificates shall be issued in Forms V and VI respectively. (Indian Boiler Regulations, 1924.)

32. (i) The fees payable for inspections made by an Inspector on tour [as set forth in the tour programme prescribed by rule 29(iv) and (v)] shall be as follows:—

Fees are calculated on the basis of boiler rating (square feet of heating surface) as prescribed in Regulation no. 158.

| | | | | | Rs. |
|-------------------------------------------|-------|-------|-----|----|-----|
| For boiler rating not exceeding 100 | ... | .. | 20 | | |
| Ditto exceeding 100 but not exceeding 300 | ... | 300 | .. | 30 | |
| Ditto do. 300 | ditto | 500 | ... | 40 | |
| Ditto do. 500 | ditto | 700 | ... | 50 | |
| Ditto do. 700 | ditto | 900 | ... | 60 | |
| Ditto do. 900 | ditto | 1,100 | ... | 70 | |
| Ditto do. 1,100 | ditto | ... | ... | 80 | |

Fees for the inspection of steam pipes made after structural alteration, addition or renewal, under sections 8(3) and 8(4), and not at the time of the inspection of the boiler Rs. 50

(ii) Fees payable for inspections made by an Inspector otherwise than on tour shall be double the above amounts plus travelling expenses admissible under Financial Handbook, volume III, from and to Cawnpore or from the place in which the Inspector was on duty according to tour programme, rule 29(iv) and (v) to the place in which a boiler is to be inspected and back, whichever is less. For inspections made by the Chief Inspector on appeal the fee shall be double the amounts in rule 32(i) plus travelling expenses as above.

A refund of travelling expenses may be made by the Chief Inspector when any inspection out of tour is done by an Inspector while on tour according to the programme prescribed in rules 29(iv) and (v) without incurring any extra travelling expenses to do the inspection. Also when two or more boilers are inspected out of tour in the same or different stations on one journey, the travelling expenses of the Inspector may be proportionately distributed and refunds made to the persons who applied for the inspection.

(iii) Provided that fees payable for inspections made by an inspector otherwise than on tour of registered boilers imported by the owner into the province or moved from one place to another in the province shall be as follows :—

| Conditions. | Rate of fees. | |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------|
| | Portable, vehicular or vertical boilers under 200 sq. ft. heating surface. | All other boilers. |
| I.—For the second inspection of a transferred boiler which was not in the first instance properly prepared for inspection. | Double proportionate fee plus travelling expenses. | Double proportionate fee plus travelling expenses. |
| II.—When certificate of a transferred boiler expires before the tour month of the new district and for imported registered boilers. | Proportionate fee .. | Proportionate fee. |
| III.—When a boiler is transferred to another place in the same district, certificate being in force. | Certificate remains in force. | Ditto. |
| IV.—When a boiler is transferred to another district, certificate being in force. | Ditto .. | Ditto. |

NOTE.—If a portable vehicular or vertical boiler of less than 200 square feet heating surface is moved to a new district after the tour month of that district, the inspection will be made on the expiration of the existing certificate on payment of proportionate fee for the issue of a certificate up to the tour month of the new district, but if the tour month of the new district is within the period of the certificate inspection on proportionate fee will only be made in the tour month of the new district and double proportionate fee plus travelling expenses will be charged for inspection at the expiration of the certificate out of tour time.

| Conditions. | Rate of fees. | |
|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Portable, vehicular or vertical boilers under 200 square feet heating surface. | All other boilers. |
| V.—When a boiler, which has not been moved, is not inspected on tour. | Double fee plus travelling expenses. | Double fee plus travelling expenses. |
| VI.—When a boiler is not inspected on tour, it having been moved to another place in the district and not erected at the time of inspection. | Ditto .. | Proportionate fee. |
| VII.—When a boiler is not inspected on tour and is moved to another district. | Ditto .. | Proportionate fee, provided the boiler was not erected in the new district in the tour month of that district, otherwise double fee plus travelling expenses. |

NOTE.—Proportionate fee as prescribed in rules 22(i) and 32(i). Travelling expenses admissible under Financial Handbook, volume III. Extra charges for the inspection shall be made in accordance with rule 16.

(iv) It is incumbent on the purchaser of an erected boiler which he intends to work on the same spot to satisfy himself that the working of the boiler at the time of purchase is covered by a certificate. If he fails in this respect he is liable to pay a double fee and travelling expenses under rule 32(ii) if an inspection has to be made out of the tour season.

(v) Any sums paid by mistake or in excess of a prescribed fee or for an inspection which is not made owing to some reason other than the default of the person applying for it to be made or for an inspection made in pursuance of an appeal which is successful shall be refunded upon an application for its refund within one year from the date of payment.

(vi) Under section 14(2), if the boiler is not properly prepared and ready for inspection in the prescribed manner, the fee is consequently forfeited and a second fee and travelling expenses as in rule 32(ii) must be paid for a second inspection—single or double fee according to the rules.

(vii) Separate fees are to be paid for inspections made after repairs—single or double fees and travelling expenses as in rule 32(iii) according to the rules.

Provided that if a boiler is offered for inspection after repairs within twenty-eight days of its inspection when the Inspector was on tour as in rule 29(iv) and (v) the inspection shall be deemed to be within the tour period and single fee may be charged. For any extra inspection

out of the four months as given in rule 29(iv) and (v) due to a boiler not being properly prepared for inspection in accordance with paragraph 150 of the Indian Boiler Regulations, 1924, copy of which is printed on the reverse of the Notice Form B, double fees and travelling expenses admissible under Financial Handbook, volume III, shall be paid.

(viii) No fees shall be charged for inspections made, at such times when fire-boxes or smoke tubes of locomotive or other types of tabular boilers are withdrawn, of the internal parts of boilers otherwise inaccessible to close inspection, unless the inspection is made at the request of the owners. In such cases, single or double fees and travelling expenses as in rule 32(iii) must be paid according to the rules.

(ix) Owners may obtain a copy of their boiler Registration Book on payment of Rs. 25 on application to the Chief Inspector.

(All fees to be paid in accordance with rule 4.)

VI.—ACCIDENTS.

33. Any accident to a boiler or steam pipe should, within twenty-four hours of its occurrence, be reported in writing to the Chief Inspector of Factories and Boilers, United Provinces, Cawnpore.

33A On receipt of a report of an accident by the Chief Inspector he should either immediately proceed to investigate the accident personally or forward it to an Inspector for investigation. If the report is received by an Inspector he should report the matter to the Chief Inspector with the least possible delay for orders.

34. The Inspector at his inquiry shall make a careful examination of the damaged parts, and shall take such measurements and make such sketches for the purpose of his report as he may deem necessary. He shall inquire into the circumstances attending the accident and note the time of its occurrence, its nature and extent, the injury caused to persons and the damage done to property. The report should be in the style of the reports of Preliminary Inquiries under the British Boiler Explosion Acts, 1882 and 1890.

35. Inspectors are authorized to take the written statements of witnesses and all persons immediately concerned with the accident. In order to comply with the provisions of section 18(2), the Inspector should present to the owner or persons in charge of the boiler a series of written questions on all points that are material to the inquiry.

36. The Inspector must decide whether the use of the boiler can be permitted at the same or at a lower pressure without repairs or pending the completion of any repairs or alterations that he may order. In no case should he issue a provisional order or renewal certificate, until his orders have been carried out.

37. The report should be sent without delay to the Chief Inspector ; if he considers that the investigation has been sufficient, he will record the facts in his register of accidents, and enter a brief account of the accident in the Registration Book, a copy being made in the memorandum of Inspection Book. If, however, the accident is of a serious nature and in all cases in which an explosion has occurred, the Chief Inspector should, after receipt of the Inspector's report, proceed to investigate the accident personally or to move the Local Government to appoint a commission to inquire into the accident. Reports of such inquiries should be recorded as indicated above.

38. Commissions appointed under the preceding rule should ordinarily consist of the Chief Inspector and one independent person.

39. A brief account of all accidents and their causes should be included in the Chief Inspector's Annual Report.

40. If in the course of an inspection or at any other time the Inspector discovers damage which comes within the definition of an accident but which has not been reported, he should report the facts at once to the Chief Inspector for action under section 24(a).

VII.—APPEALS.

41. Every petition of appeal shall be made in writing either in English or in the Vernacular, and when the appeal is to an Appellate Authority it shall bear a court-fee stamp of twelve annas

42. An appeal may be presented either personally or by registered post to the Chief Inspector.

43. The petition of appeal shall be accompanied by the original order, notice or report appealed against, or by a certified copy thereof, or where no such order, notice or report has been made in writing, by a clear statement of the facts appealed against, the grounds of appeal and the referring section of the Act.

44. On receipt of an appeal the Chief Inspector shall, if the appeal is to be heard by himself, at once fix a date for hearing the appeal ; and if it is to be heard by the Appellate Authority, obtain a date for the hearing of the appeal from the President of the Court. It is important that there should be no delay in the decision of appeals, as the stoppage of a boiler is likely to put the owner thereof to great inconvenience. The decision should ordinarily be given within 10 days from the receipt of the petition of appeal.

45. When the date for hearing has been fixed, the Chief Inspector shall at once issue a notice to the appellant stating the date for hearing and informing him that if he wishes to be heard in support of the appeal or to produce evidence, he must be present either in person or by authorized agent with his evidence on the date fixed. The notice shall be sent to such address as shall be entered in the petition of appeal.

46. In all appeals the Chief Inspector shall decide whether the presence of the Inspector is necessary, and shall issue orders accordingly.

47. The Appellate Court shall have the power to secure the attendance of witnesses and to make local inquiries under the provisions of the Code of Civil Procedure.

48. If the appellant is not present on the date fixed, the appeal may be decided in his absence.

49. The Local Government shall appoint an officer to be President of the Appellate Court for such period as it thinks fit. The President shall be an officer with judicial or magisterial experience.

50. The Local Government shall constitute a panel of assessors or the purpose of assisting in the hearing of appeals. Assessors must be fully qualified mechanical engineers.

51. Whenever the date for an appeal before the Appellate Court has been fixed, the Chief Inspector shall, under the orders of the President of the Court, arrange for the attendance of three members of the panel constituted under the preceding rule to act as assessors.

52. The manner of summoning an assessor under rule 51 shall be by sending a summons by messenger or by registered post.

53. An assessor shall receive such remuneration and travelling expenses incurred for any day on which he attends the Appellate Court as the Local Government may by order direct.

54. In appeals before the Appellate Court the President is authorized to fix the costs and recover them from the appellant in any case in which he considers this necessary; in all cases of appeal in which a local inspection is required by the appellant he shall deposit in advance the full cost of such inspection.

55. Any order on appeal authorizing the registering of a boiler or the grant of renewal of a certificate shall be deemed to be subject to the payment of such fees as are prescribed by rules or regulations framed under the Act.

Penalties.**56. Any person who :—**

- (a) wilfully obstructs an Inspector in the exercise of any power conferred by any rule made under the Act, or
 (b) does or omits to do any act prohibited or prescribed by regulations or by these rules,

shall be punishable with fine which may extend to one hundred rupees.

FORM A.**BOILER INSPECTION DEPARTMENT.***Register of Boilers.*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------------|-----------------|---------------|-----------------------|---------------------------------|-----------------------|----------------|---------------------|---------------------------|
| Registry number. | Type of boiler. | Boiler rating | Name of manufacturer. | Year and place of construction. | Date of registration. | Name of owner. | Place where in use. | Remarks (Transfers, etc.) |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

FORM B.**INDIAN BOILERS ACT, 1923.****Act V of 1923.***Notice for examination of boiler under section 8.*

No. _____ of 192 .

CHIEF BOILER INSPECTOR'S OFFICE:

Dated _____ *the* _____ 192 .

To

IN reply to your application, dated _____ you are hereby informed that Boiler Registry no. _____ at the above named

premises will be thoroughly examined
hydraulically tested by the Government Inspector on
the _____

To enable the examination to be made you are required to—

- (a) afford to the Inspector all reasonable facilities for such examination and all such information as may reasonably be required by him ;
- (b) arrange that the boiler is properly prepared for examination in the prescribed manner, see instructions on reverse ;
- (c) provide in the case of a boiler about to be registered such drawings, specifications, and certificates as may be prescribed.

2. You may continue to use the boiler provided it is ready for inspection on the abovementioned date.

3. Voucher no. _____ - in acknowledgment of Bank
Treasury receipt no. _____
for Rs. _____ accompanies.

Inspector of Boilers.

See reverse for preparation required.

(Reverse of Form B.)

PREPARATION FOR EXAMINATION.

SEE PART II, CHAPTER I OF THE REGULATIONS.

(A) Preparation for thorough inspection.

At every inspection of a boiler for the grant or renewal of a certificate the boiler shall be empty and thoroughly clean in all its parts, all doors of manholes, handholes, and sight-holes and cleaning plugs and all caps in the headers and mud-drums of water-tube boilers, all firebars, bearers, front plates, bridge plates, fire-bridges, brick arches, oil fuel burners and mechanical stoker fittings shall be removed. All valves and cocks comprising the boiler mountings must be opened up and taken apart and the valves or cocks ground, where necessary, before the Inspector's visit

Provision should be made for the removal of lagging or brickwork or other concealing part and for the drilling of plates if required by the Inspector and for verifying the pressure gauge and safety valve dimensions and weights. All smoke tubes, smoke-boxes, and external flues must be swept clean.

Provision must be made for the effective disconnection of all steam and hot water communication with any other boiler under steam. This must be effected either by the removal of a length of pipe from the

steam, feed and blow-down piping or by the insertion of substantial blank flanges. Where blank flanges are employed, they must be inserted between the flange of the chest and the pipe attached to it. No blank flange shall be inserted between a safety valve chest and the boiler.

NOTE.—These provisions as to effective disconnection shall extend to every case where in a person is sent, or with the assent of the owner or person in charge goes, into a boiler for any purpose.

(B) Preparation for hydraulic test.

The chests of all mountings subject to steam pressure should be in place and shut tight or blank-flanged. The safety valves should either be jammed down or removed and the chest opening blank-flanged. The attachment tapped $\frac{3}{4}$ " Whitworth bolt and nut thread for the Inspector's pressure gauge and the nipple tapped $\frac{1}{2}$ " Whitworth bolt and nut thread for connecting the Inspector's test pump hose shall be in order. All doors shall be properly jointed and tightened up. The boiler shall be completely filled with water, care being taken to allow all air to escape and, if possible, a preliminary test not exceeding the working pressure of the boiler shall be taken before the Inspector's visit to test the tightness of the joints. When a boiler is hydraulically tested for the first time, it shall be entirely cleaned of lagging or brickwork; at subsequent tests the lagging or brickwork or portion thereof shall be removed if required by the Inspector.

Preparation now required.—(A), (B).

NOTE.—The last certificate for the boiler should be shown to the Inspector.

T R. FILED.

* No - DATE - 192 .

* Boiler Register no - * Certificate no. - 192 .

APPLICATION FOR THE REGISTRATION-INSPECTION-OR TRANSFER OF BOILER
Under Act V of 1923 (Indian Boilers Act)*Dimensioned drawing and certificates of tests, vide Regulation 4, should be sent along with an application for the Registration of a boiler.*

| † Boiler | | | Name of Owner or Company. | When situated nearest Railway Station and distance. | Date granted for inspection and period for which certificate is required. | Description of work carried on. | Treasury receipt. | | | Remarks. |
|---------------------------|--------------|-------------------------------|---------------------------|-----------------------------------------------------|---------------------------------------------------------------------------|---------------------------------|-------------------|-----------------------------|-------------------|----------|
| Registry number on boiler | Description. | Boiler rating, i.e. capacity. | | | | | Name of treasury. | Number and date of receipt. | Amount deposited. | |
| | | | | | | | | | | |

* These entries will be made by the Boiler Inspector's office.

† Only one boiler should be put down in each application form.

In the case of a transfer required for a boiler imported into the Province the following particulars to be given in addition to the above:-

- (I) Name and full address of person or firm from whom the boiler has been purchased. } _____
- (II) Name and full address of Owner to whom last certificate was granted. } _____
- (III) The certificate or provisional order now in force under which the boiler was being worked. } _____

I hereby apply to the Chief Inspector of Factories and Boilers, United Provinces, Cawnpore, for the Registration (cross out which does not apply) and the grant of a certificate for the Boiler above-named, for which the requisite fee has been credited into the Government Treasury, and receipt enclosed herewith, with reference to his Notice of expiry no. -- --, dated -- --, 192 .

DATED AT _____

Signature of Owner or Agent.

The _____ day of _____ 192 .

(Reverse of form C.)

SCALE OF FEES.

Fees for the registration and inspection of Boilers are calculated on the basis of **BOILER RATING** as prescribed in Regulation nos. 158 and 159 of the Indian Boiler Regulations, 1924, under the Indian Boilers Act, 1923.

BOILER RATING IS THE NUMBER OF SQUARE FEET OF HEATING SURFACE OF THE BOILER.

REGISTRATION FEES.

The fee for the registration of each Boiler shall be —

| | Rs. |
|---------------------------------------------------|-----|
| For Boiler Rating .. 100 not exceeding. | 40 |
| For Boiler Rating .. 100 but not exceeding .. 800 | 50 |
| exceeding. | |
| " .. 800 " " " .. 500 | 60 |
| " .. 500 " " " .. 700 | 70 |
| " .. 700 " " " .. 900 | 80 |
| " .. 900 " " " .. 1,100 | 90 |
| " .. 1,100 | 100 |

The registration fee shall cover the thorough inspection, hydraulic test, verification of registry number, and steam test, subject to the provisions of section 14(2).

INSPECTION FEES.

Fees for the inspection of registered Boilers in accordance with rule 82 shall be —

| | Rs. |
|---------------------------------------------------|-----|
| For Boiler Rating .. 100 not exceeding. | 20 |
| For Boiler Rating .. 100 but not exceeding .. 800 | 30 |
| exceeding. | |
| " .. 800 " " " .. 500 | 40 |
| " .. 500 " " " .. 700 | 50 |
| " .. 700 " " " .. 900 | 60 |
| " .. 900 " " " .. 1,100 | 70 |
| " .. 1,100 | 80 |

Fee for the inspection of Steam Pipes made after structural alteration, addition or renewals under sections 5 () and 8(4) and not at the time of annual inspection 30

Fees payable for inspection made by an Inspector otherwise than on tour or by the Chief Inspector on appeal shall be double the amount plus travelling expenses admissible under Financial Handbook, volume III, to the Inspector or Chief Inspector from and to Cawnpore. This does not apply to the fees charged for the registration of Boilers.

REGULATION NO. 4 OF THE INDIAN BOILER REGULATIONS, 1924.

STANDARD REQUIREMENTS (a) Material.—All steel, plates, rivets, and bars used in the construction of boilers shall be tested and found to conform with the requirements of Chapter II.

(b) Construction.—All boilers during construction shall be under the supervision of an inspecting officer.

(c) Inspecting Authority's Certificate.—For boilers imported into British India a certificate from an Inspecting Authority in Form II certifying that the material was tested and the Boiler built under their supervision shall be furnished to the Chief Inspector before or with the application for registration. In the case of steel made and tested by well-known makers in India or Great Britain the certificate of the makers in Form IV as prescribed in Regulation 27 may be accepted in lieu of a certificate from an Inspecting Authority.

The Chief Inspector shall decide whether for the purpose of this regulation a maker is "well known" or not.

(d) Certificates, etc., under section 14(1) (c) of the Act.—In advance of, or along with, an application for registration of a boiler, the following certificates and drawings or specifications shall be furnished to the Chief Inspector, namely:—

- (i) A certificate in Form III of manufacture and test signed by the maker or by a responsible representative of the maker of the boiler containing a description of the boiler, its principal dimensions, particulars of the kind of material used in its construction, the thickness of all plates, the diameter of and method of forming the rivet holes in the shell plates, particulars of any departure from ordinary practice in making the shell such as solid rolling or welding, the hydraulic test to which the boiler was subjected, the intended working pressure, the area of heating surface, the year and place of make, and the works number of the boiler.

There may be included in such certificate a further declaration that samples of the angle, stay or rivet bars and rivets used in the construction of the boiler had been certified by the makers to have been tested and found to comply with the requirements of Chapter II; in which declaration the kind of material used and the limits of tensile breaking strength with which the test comply shall be stated with sufficient precision to obviate the risk of confusion in making allowance. Where such further declaration is included in such certificate, the certificates referred to in clause (iii) of this sub-regulation shall not be required.

- (ii) A drawing or print to a scale, in the case of large boilers of not less than $\frac{1}{2}$ inch to the foot and in the case of small boilers, of not less than $\frac{1}{4}$ inches to the foot, showing the principal dimensions and longitudinal section and end view of the boiler, and bearing the works number of the boiler and the maker's once stamp. The drawing shall show details of riveting of longitudinal and circumferential shell seams with pitch of rivets, cross spacing of rivet rows and diameters of rivet holes, the radii of curvature of bent plates, fillets of flanges and corners of bent plates, and where gusset stays are fitted, the number and diameter of rivet holes in each joint of gusset stay.

- (iii) A certificate from the steel maker and a certificate from the maker of the plates, rivets or bars of the nature referred to in Regulations 26 and 27 respectively. The certificate from the maker of the plates, rivets or bars shall show the charge numbers, the plate or bar numbers and the number and dimensions of the various plates, etc., tested, their ultimate tensile breaking strength in tons per square inch of section, the percentage of elongation and the length on which measured, the number, kind, and result of bend or other tests made and the date of tests.

(e) Maker's stamp.—The boiler shall have stamped upon its front plate in a conspicuous position the following particulars:—

| Work's number | Maker's name. | | Year of make |
|----------------------------------------------------------------|---------------|----|--------------|
| Tested to | lbs. | on | |
| W. P. | lbs. | | |
| Inspecting Officer's or Inspecting Authority's official stamp. | | | |

Appendix to the United Provinces Boiler Inspection Rules, 1924,
General Working of Boilers, Instructions for Boiler Attendants.

APPENDIX.

General working of Boilers, Instructions to Boiler Attendants.

These instructions should be frequently and carefully studied, with a view to keeping in mind the precautions to be observed, and the ordinary procedure to be followed in the safe working of boilers.

Precautions before starting the fires.

Before starting the fires in a boiler, the attendant should—

- (1) see that there is sufficient water in the boiler and that the gauge cocks are working freely.
- (2) ease safety valves, or open cock on top of boiler to allow air to escape.
- (3) see that the blow-off cock is fully closed and tight;
- (4) see that the safety valves and feed check valve are free and workable;
- (5) see that water is not leaking from any part of the boiler;
- (6) note if the pressure gauge pointer is at zero;
- (7) see that the feed pump is in working order.

He must not rely on the supposition that the water he has previously put in is still in the boiler, as it may have run out without his knowledge through a leak or open cock, nor can he be sure that the gauge glass shows the true water level until he has tested it. This is done in the following manner: shut off the lower gauge cock and empty the glass by the drain cock; then shut the drain cock and open the gauge cock; if everything is in order, the water will then rise in the glass to the same height as before.

Raising steam.—In getting up steam in all types of boilers, the operation should be as gradual as circumstances will allow. Nothing turns a new boiler into an old one sooner than getting up steam too quickly. Forcing the fires when starting work is liable to cause straining of the seams and tubes of the boiler. In the case of large boilers generally, steam should not be got up in less than six hours. Before getting up steam, the water level should be observed, to ensure that water is at the proper height in the glass, the pressure gauge noted, and the safety valves tried to see they are free. The blow-off cock should be examined to see that it is completely shut and tight.

Pressure Gauge. The pressure or steam gauge should be kept in order, and be in such a position as to be easily seen by the boiler attendant. There should be a plain mark on it showing the highest pressure allowed for the boiler, and the dial should be kept clean so that the figures may easily be read.

Steam Pressure.—Ordinarily the safety valve will prevent the steam from rising much above the working pressure, but if the steam gauge shows so rapid an increase of pressure as to indicate danger of exceeding the highest limit, water should be immediately fed into the boiler and the dampers partially closed in order to diminish the effect of the fire. If, however, the water has fallen so low that there is danger of an accident from this cause, the fires should be withdrawn before feeding in water, the safety valves eased, and if the engine is at rest, it should be started so as to reduce the pressure.

The Safety Valves are provided to guard against over-pressure. They should be moved by hand every day so as to prevent them from sticking. If moved only occasionally, they are liable to leak.

The valve can be tested by slowly raising it a little, and when let down, it should close perfectly tight. It should never be opened by a sudden knock or pull. If it does not close tight, turn it on its seat until it fits, or when its construction does not permit this, raise it slowly a few times and let it down again, but on no account must the valve be screwed down further or loaded more than what has been allowed by the Inspector.

Safety valves must never be overloaded, and spring valves should have ferrules or other provisions against their being screwed down too far. In case of an accident resulting from wilful overloading the culprit might be held criminally responsible at the official enquiry or inquest.

Low Water Safety Valves.—If there is a low water safety valve, test it occasionally by lowering the water level to see that the valve begins to blow at the right point. It should give warning "before" the water level has sunk too low, and before damage can be done. When the boiler is opened, examine the floats and lever and see that they are free and that they give the valve the full rise. With the ordinary type of high-steam and low-water safety valve the float should be down at its lowest position and the valve full open when the boiler is empty.

The Water Gauges.—These will be kept best in order by frequently blowing through. The cocks are thus kept in good working condition without leaking. Blow through the drain cock at the bottom of the gauge, and shut and open the steam and water cocks every few hours. These cocks should be blown through more frequently when the water is dirty. Should either of the passages become choked, or whenever the water in the gauge glass moves sluggishly, the passages must be cleaned. This is best done with a wire. The gauge glass is so arranged that its top cock connects with the steam space and its bottom cock is below the water line. The water line will ordinarily be near the centre of the glass tube. Always test the glass water gauges thoroughly the first thing in the morning and at the commencement of every shift. This is done by first opening the drain cock, then shutting the upper cock which should give water; the upper cock should then be opened and

the bottom cock closed—which should give steam; during this test the drain cock should be kept open. ~

If water and steam do not appear in proper order the cocks are choked and the passages should be cleaned. To lessen the risk of breaking the gauge glass the water cock should always be re-opened after the steam cock.

Gauge glasses with a narrow white stripe running the whole length of the glass on the side next the boiler are recommended, as they show the water line more clearly, especially when the water is dirty.

The Government Boiler Regulations require every water gauge glass to be fitted with a guard to prevent injury to the attendants. See that it is always in place, and clean, when there is steam in the boiler.

Special note.—It does not follow that there is plenty of water in the boiler because there is plenty of water in the gauge glass. The passages may be choked and empty gauge glasses are sometimes mistaken for full ones, and explosions have resulted therefrom. Hence the importance of keeping the gauge cocks perfectly tight and clean and of blowing through the test cocks frequently.

A large number of accidents have been due to inoperative water gauges, and to negligence of the attendant in not carefully reading the water level.

The blow-off cock.—The Blow-off should be used daily if the water is at all dirty or sedimentary, especially with Locomotive type and Vertical Boilers, as their narrow water spaces are liable to get choked with mud, which soon hardens into a solid mass. The amount of water to be blown out depends on the size of the boiler and can be determined only from experience. When blowing out the best result is obtained, if the water has been at rest for some time (say before the engine is started) thus giving the sediment time to settle, if the feed water is clean, merely turn the cock round.

The scum cock.—When scum cocks are fitted, if the feed water is dirty, a little should be blown off daily; if the water is clean, merely turn the cock round. Before opening the scum cock see that the water is at the height indicated by the water-level pointer, otherwise the scumming will be ineffective. Water should be blown from the surface through the scum cock when steam is being drawn off, i.e., when the engine or other machinery is working.

Manhole and other door joints.—When making such joints, the jointing material should never be of round-sectioned packing. Care must be taken that the spigot of the door is centrally placed in the hole, as many accidents have resulted from packing being blown out between the spigot and side of hole, even when the clearance was only $\frac{1}{2}$ inch. The nuts must be carefully and evenly tightened. Further tightening should be made during the process of heating up the boiler when raising steam.

Steam pipes—When properly arranged should give no trouble. Frequently, however, they are so designed as to contain pockets, in which, while out of use, condensed steam accumulates. Such water is exceedingly dangerous and great care should be taken to see that the pipes are properly drained *before the stop valve is opened*, otherwise "water hammer" will take place even with the best designed steam pipes, and disastrous explosions causing loss of life and property, may occur.

Scale and grease—Roughly speaking, scale offers a hundred times as much resistance to the passage of heat as does a similar thickness of steel or iron. A half-inch furnace plate covered with $\frac{1}{16}$ th inch scale is as efficient a heat retarder as a steel furnace 10 inches thick. Grease is about ten times worse than scale. In a boiler at work the temperature of a clean furnace plate is only slightly in excess of that of the water in the boiler; but if scale or grease is interposed between the water and the plate, the latter acquires a temperature more nearly approximating that of the flame with which it is in contact. If the fire is fierce (artificial draught) the furnace tube may grow so hot that it elongates considerably. If, in addition, cold air is admitted during each firing a concerted action of the furnace takes place, which is one of the worst causes of boiler wear and tear.

Wear and tear—can be reduced and the life of a boiler prolonged if scale and grease are prevented from accumulating in a boiler. The combined effect of scale or grease and artificial draught are disastrous. Scale or grease also causes waste of fuel.

Grease.—A mixture of sedimentary water, soda, and grease produces an adhesive scum. Where this is suspected, the water level should never be lowered below the furnace top, unless the boiler is afterwards entered and this scum cleaned off the furnace plate before firing again.

Scale removal.—The customary method is not a satisfactory one. The boiler is emptied and then cooled down by opening all the manholes and the result is that the scale, which would otherwise be soft, hardens through contact with the air, and requires laborious chipping off.

A very effective, but slower, method, is to retain the water in the boiler until cool, and not to run it out until the men are ready to enter the boiler with water hose, brushes and scrapers. The scale will then be soft and easily removable.

If time is a consideration, the cooling can be accelerated by adding cold feed to the hot water in the boiler and slowly running off the cooled water. Another method is to blow off the boiler with the lowest possible pressure (not more than 20 lbs.) and to keep it closed until cold. The scale will then be easily removed.

Treatment of feed water.—Many feed waters require soda or other chemicals to arrest corrosion or to change the nature of the scale.

There is *no harmless chemical* which will remove scale or sediment when it has once got into the boiler, and the only effective process is to

purify the feed water before it enters the boiler. By this means the sediment, and generally, too, the added chemicals, can be deposited in tanks or filters, and therefore never goes into the boiler. Excepting when the water obtainable is very good, water purifying apparatus ought to pay any boiler owner, particularly at those works where three or more boilers are in constant work. Boiler owners wishing to have definite advice as to the best treatment of their feed water should have it analysed at some Chemical Laboratory and ascertain the best treatment in the particular circumstances.

Special attention is drawn to the not infrequent but *very bad* practice of allowing the waste steam from the Engine cylinders or pumps to be drained into the boiler Feed Water Tanks. The waste steam from cylinders is always mixed with a certain amount of oily matter, which will be deposited in the feed water tanks and ultimately be pumped into the boiler, with possibly disastrous results, as it will be obvious to every careful boiler attendant that should the oil be deposited on the furnace crowns, they may become over-heated and collapse.

It should be the first care of the boiler owner, and the boiler attendant to see that the feed water is kept as pure as possible. Impure feed water means additional expense on the upkeep of the boiler.

Preservation of boilers when not in use.—Steam boilers when not in use are liable to deterioration from corrosion, and, unless well cared for and made rustproof they may depreciate more rapidly than when in use. They should be thoroughly drained and thoroughly dried and all valves, cocks, and openings closed so as to exclude moisture. Another plan is to fill the boiler with water to which about $\frac{1}{100}$ per cent. caustic soda has been added.

SPECIAL INSTRUCTION FOR BOILER NO. _____

This boiler should be opened up and thoroughly cleaned after a period of work which should not exceed _____ A record of such cleanings should be maintained and produced, when required by the Inspector.

Inspector of Boilers.

Dated _____

